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Machine Translation-Mediated Interviewing as a Method for Gathering Data in Qualitative Research: a Pilot Project

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ABSTRACT

This article describes a project in which machine translation (MT)-mediated interviewing was used to gather data on the end users of an online application for machine translating PDFs. Four interviews with Spanish speakers were implemented using Skype Translator's instant messaging (IM) function as a medium for communication. Seven considerations on the method that arose in the project are discussed. Two of these concerned the use of IM as a medium for interviewing, namely, considerations of time zones and multitasking on the part of the interviewees. Five considerations arose that were centered specifically on MT-mediated interviewing: technology, time requirements, understanding and negotiation for meaning, participants' target language knowledge and adaptation, and user experience. These considerations can be seen as the beginning of a definition of best practices for MT-mediated interviewing.

KEY WORDS: machine translation, machine translation for communication, MT-mediated communication, MT-mediated interviewing, instant messaging

1 INTRODUCTION

I had already been considering the idea of using machine translation (MT)-mediated communication as a method for gathering research data when I started discussions with the Finnish company Multilizer in the summer of 2015. They explained that were interested

in learning more about the users of an internet-based tool they manufacture, PDF Translator.[1] They understood something about how the tool was being used through automatically generated statistics, and they understood something about their users through the web-based questionnaires they held occasionally. However, they were interested in gaining a deeper understanding of their end users and were curious about research methods that could lead them to that understanding. The result of the discussions was the launch of a cooperative project with two goals:

Goal 1: piloting the use of MT-mediated interviewing as a research method
Goal 2: gathering data on the end users of Multilizer's PDF Translator tool

The expected results for goal 1 were that the method would prove to be promising enough to warrant further study and testing, and that some factors would be revealed which can affect the use of the method. The expected results for goal 2 were that the interviews would uncover new information about PDF Translator users.

This paper focuses on the results of goal 1, the piloting of the use of MT-mediated interviewing as a data-gathering tool. The results of the goal 2 were communicated to Multilizer in a final project report in March 2016 and are not in the scope of this study.

1.1 MT-mediated interviewing

Several factors in Multilizer's situation indicated that interviewing would be a good method for gaining the understanding they were looking for. First, the focus of the interview would be an internet-based tool and its usability. As Jakob Nielsen states, "Many aspects of usability can best be studied by simply asking the users." (Nielsen 1993:209) Second, the information Multilizer would receive would be combined with information already gathered through other methods to construct a more holistic picture of users (Hirsjärvi & Hurme 2011).

As explained earlier, I had an interest in using interviews because I wanted to pilot the idea of interviewing over MT as a method for data gathering. I was aware that MT-mediated communication was already in use in various areas of business, for example by customer service representatives to support customers with whom they do not share a language (Burgett et al. 2012) or in online community forums (Burgett et al. 2012; Mitchell & Roturier 2012). I believed it would be worthwhile to try applying the approach in research.

A search of the literature on interviewing in research did not reveal studies employing MT-enabled interviewing as a method, nor did the literature on MT reveal studies in which MT was used in an interviewing context. It seemed that there was a gap in research on this particular context for using MT-mediated communication. However, both interviewing over instant messaging and MT-mediated communication in other contexts have received increasing attention since the early 2000s.

[1] pdf.translator.com

1.2 Interviewing over Instant Messaging (IM)

One of the data-gathering methods that the internet has made possible is interviewing using instant messaging (IM) applications, and the use of this medium has grown, "particularly…if the research explores an Internet-based activity such as e-learning or online community, where the research participants are already comfortable with online interactions" (Kazmer & Xie 2008:257). Mann and Stewart (2002) point out that interviewing in this context may be more natural to some interviewees than face-to-face interviewing would be.

Several interesting studies (Kazmer & Xie 2008; Opdenakker 2006) compare IM interviewing with methods like interviewing face-to-face, by telephone, or by e-mail. Other studies (Markham 2004; Voida et al. 2004) delve into the features, advantages and disadvantages of IM interviewing itself. Among the advantages of IM interviewing outlined in the studies are access to a very wide array of potential participants and a reduced need to travel to conduct interviews, meaning a reduction in project costs. One very clear advantage is that IM applications normally retain interview data in one file, meaning that no transcribing is needed after interviews, although as Opdenakker (2006) points out, this can lead to a reduction in note-taking, which can be detrimental to results.

The challenges of IM interviewing are also well covered. Both Markham (2004) and Voida et al. (2004) discuss the difficulties of learning to suppress their desire to reply overly quickly to interviewees, an act which can interrupt the interviewees' line of thought and comment. Several researchers (Markham 2004; Opdenakker 2006; Voida et al. 2004) cite the lack of the social cues we are used to relying on in face-to-face communication as potentially detrimental. IM chats are also prone to discontinuities and overlapping messaging, which can cause extra work in the analysis phase. It is interesting to ponder whether these are disadvantages to us now, as we learn to use new forms of communication, but will be so natural to future generations that they will no longer see them as disadvantages but as simple features of communication.

1.3 MT-mediated communication

Hutchins (2010) outlines three main types of use for machine translation (MT), which are described in Table 1.

Table 1: Three main types of MT use (Hutchins 2010)

MT use type	Description
MT for dissemination	Information is put through MT and the resulting 'raw' output is edited by humans in a task known as post-editing. The final result is language of publishing-level quality. The information is then disseminated to readers.
MT for assimilation	Information is put through MT and the resulting 'raw' output is consumed directly by a reader who needs a general understanding of the information, but does not need the information to be grammatically or stylistically of publishing-level quality.
MT for communication (MT-mediated communication)	MT is used in social interchange such as e-mail or instant messaging, allowing people to communicate across language barriers. Again, publishing-level quality is not a requirement for the information.

Of these three, MT for dissemination has the largest amount of research devoted to it, with significant contributions from the field of Translation Studies. In this context, MT is seen as one of the aids available to translators to use in their work, and research has addressed topics such as evaluation of MT quality, translators' roles, and processes. The task of post-editing of MT output is the focus of a number of studies; for a good overview of the research, see Koponen (2016). The use and use cases for MT for assimilation and MT for communication have slowly gained momentum over the past 20 years, and the past 5 years have seen very rapid growth. However, this rapid growth in use has not resulted in a similar rapid growth in research, and the amount of research on those phenomena remains limited.

Although the amount of research remains small, MT-mediated communication has been studied since at least 2002, when the Intercultural Collaboration Experiment (ICE) was established between several Asian universities to provide communication tools for multilingual online meetings and collaboration (Nomura et al. 2003). In conjunction with ICE, various aspects of MT-mediated communication were studied and reported on (Nomura et al. 2003; Ogura et al. 2004). Since then, similar studies have been done involving other environments where multilingual communication took place via MT (Yamashita & Ishinda 2006; Yasouka & Björn 2011; Calefato et al. 2012; Gao et al. 2013). Most often these involve experiments with university students as participants. They are placed in geographically distributed, multilingual work teams and given a specific task to complete, with communication related to the task taking place in an online communication tool with embedded MT. Then various aspects of the communication are analyzed.

Calefato et al. (2012) examined how the activeness of participation in discussions was affected when people use their native language over MT instead of English. They found that discussions were more balanced when MT allowed people to use their own languages. In the experiment covered by Ogura et al. (2004), participants wrote messages in their own language, reviewed the MT output in English, and then had a chance to make changes before that output was machine translated further into the languages of their other team members. The study analyzed the types of adaptations they made in their source text messages to produce better MT output in English.

Yamashita and Ishida (2006) looked at how communicators used referring expressions when discussing their tasks, and how machine translation affected the use and success of reference communication. Yasouka and Björn (2011) studied the importance of establishing and maintaining common ground, specifically through techniques such as using project-specific jargon, to the communication process. Their findings indicate that this establishment of common ground plays as important a role as the linguistic quality of the MT in successful MT-mediated communications.

An interesting study by Gao et al. (2013) analyzed how participants' belief in whether MT was in use or not affected their view of the communication experience. Participants were paired up and given a task that they discussed in an online chat. The discussions were in English, although the English-speaking participants did not know whether the messages they received were typed by their Chinese-speaking partners or put through MT. The results showed that the belief of MT being present had a positive effect on the participants' view of the communication experience, perhaps because they could attribute mistakes or ungrammatical language to the machine.

2 THE PROJECT

The project was conducted in July and August of 2015 and comprised interviews with four users of PDF Translator. PDF Translator takes a PDF file, extracts the text, puts the text through machine translation to translate it, re-assembles the file to match the original PDF, and creates a new PDF in the machine-translated language. It is used by people who have a document they want or need to understand, but they do not know the language it is written in. It is therefore a tool enabling MT for assimilation. PDF Translator is available by download in the internet and has a free version that can automatically translate a limited number of pages of text. The paid versions of the tool involve purchasing a 'quota', which is a pre-defined number of pages that users can translate with the tool. The user base of PDF Translator is large - a significant number of new downloads of the free version are completed every day - and diverse, with users across the globe who access any of the 27 languages available.

2.1 The technology

It was assumed that the target audience of the study, users of the MT tool PDF Translator, might be open to participating in an innovative interviewing method that also relies on MT. However, since PDF Translator is an MT tool for assimilation, not communication, a different MT tool would be used for interviewing.

Skype Translator preview was selected as the interviewing tool for several reasons. First and foremost, Skype is widely available and included in many software packages, meaning that it would be easier to recruit participants who already had the technology available. Also, because Skype uses Microsoft's Bing Translator, the quality of the MT for the language pair to be used (English-Spanish) could be assumed to be of good enough quality to support this type of pilot project.

Another decision was to conduct the interviews using the instant messaging function of Skype Translator instead of the video and voice function. Due to Skype's background as

a video and voice tool, as well as the recent press on Skype Translator, which features video and voice, Skype Translator is mostly seen as a tool for spoken language. However, it is also equipped with a text-based IM chat that uses the same MT backbone (Bing Translator) as the video and voice function.

The IM function was chosen for four reasons. The first is that it poses fewer technology requirements for both the interviewer and interviewees. It was assumed that most potential participants already had the technology needed for IM conversations, whereas Skype video and voice calls require not only a computer and very solid internet connection, but also a camera and voice equipment. The second reason was that the IM involves a simpler technology with fewer components that need to communicate with each other to produce good results, meaning that it would be less likely to have problems. A third reason focused on the participants: people who are not familiar with video calling may feel uncomfortable using it in an interview situation. The final reason for selecting IM was that no transcription of the interviews would be needed. Once the interviews were over, the transcription of the conversations would be ready. As mentioned in the literature on IM interviewing (e.g. Opdenakker 2006), this has been cited as a considerable advantage.

At the time of the interviews, Skype Translator was available in a preview version and was separate from the traditional Skype application. The former had to be downloaded separately and had more strict technical requirements than Skype. However, for bilingual conversations, it was sufficient if one of the participants had the Skype Translator application. The second participant could be working on a regular Skype application, but had the same MT benefits as the Skype Translator participant.

During Skype Translator chatting, each participant enters their text in their own language. The application translates that text and can be configured to show both the original and the machine translated text to each participant, with their own language always shown at the top. The following example shows an excerpt from an anonymized interview. This excerpt was taken directly from Skype Translator to highlight the view the user has while working.

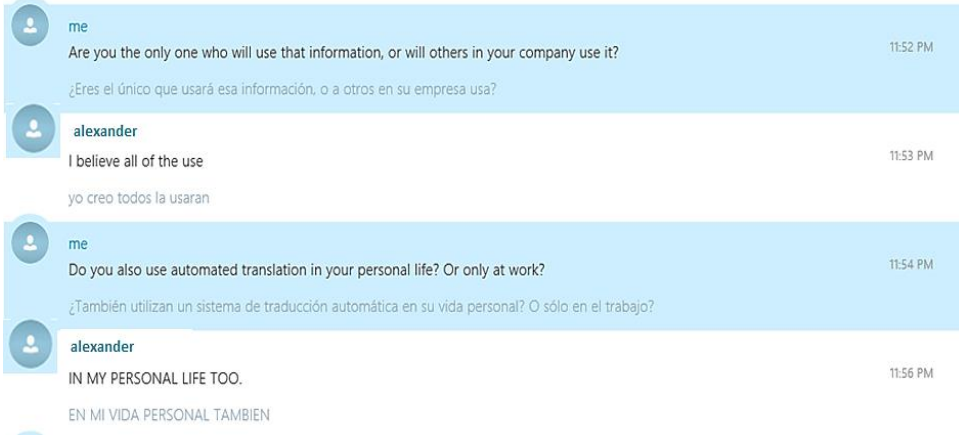

Figure 1: Skype Translator chat, view the user has while working

2.2 Recruiting interviewees

As I was inexperienced in using MT-mediated communication with speakers of languages other than English, I decided to limit the recruitment of interviewees to only those users who downloaded the Spanish-language version of PDF Translator. I have a basic understanding of Spanish and I anticipated that it might be helpful to be able to read the source texts. I took into consideration that partial knowledge of the language could affect the outcome and would make it inherently different from MT-mediated communication that involves participants who have no knowledge of each other's languages, but decided that this would be the best approach to ensure the success of both goals of the project. I return to this issue in the Discussion section.

Another reason for selecting Spanish speakers was that the Spanish-English language pair is often recognized as one of the most favorable ones for MT. An example of this is the maturity check conducted by the European Commission in 2011. This evaluated the MT results for 21 languages paired with English, and Spanish was found to be the one that produced the best results (Reiman 2014).

Interviewees for the study were recruited through a short questionnaire that was displayed to all PDF Translator users who downloaded the Spanish language version of the tool. This questionnaire requested information on e-mail addresses, Skype names, willingness to be interviewed, and a question regarding the type of information that they used PDF Translator to translate. A reward of 100 pages of free translation quota was offered to all who participated in the interviews. At the top of the recruiting questionnaire was a statement that the information collected was for a research project and would not be used for any other purpose than this specific project. Later in the interviews, it was again explained that the information would be used for research purposes only and that all participants would be anonymous.

Initially I used e-mail to contact people for scheduling Skype IM interviews. I soon noticed that the response rate for this was very low: out of 15 invitations sent, I received only 1 response. Over the course of the ensuing e-mail conversation to schedule that one interview, the person quit responding. I decided to change tactics and I began to send invitations to users directly in Skype. This proved to be a more effective solution. I eventually recruited and conducted full interviews with four users. In all four cases, a key factor in successfully recruiting interviewees was catching the person online in Skype in real time. Once synchronous communication was established, all four were able to begin the interview immediately or within 30 minutes.

The interviewees were all male, between the ages of 38 and 52, and all had either a technician or university-level degree. Two had an educational background in computer science or information technologies, a third reported his proficiency with computers to be "100%" and the fourth reported average computer skills. None had broad competence in any language other than their native Spanish. Three reported having some knowledge of English, which they described as "a little", "very little", and "low". One reported having no knowledge of English. All were located in Central and South America.

2.3 The interviews

Semi-structured interviewing was chosen because we wanted to get comparable information on certain themes from the four interviewees but at the same time leave flexibility to ask follow-up questions or move to topics brought up by the interviewees (Hirsjärvi & Hurme 2011). Flexibility might also be needed because of the nature of MT-mediated communication, which might require additional questions. The focus of the interviews was the interviewees' use of PDF Translator, and the majority of the questions centered on themes around that, with the aims of both gathering information for goal 2 of the project and act as the pilot for goal 1. At the end of the interview, one question was asked which focused specifically on goal 1: what was the experience of being interviewed via MT like for the interviewees. The themes covered are shown in Table 2 below.

Table 2: Themes covered in the interviews

Theme	Description
Initial data gathering	• General questions about the interviewee: age, level of education, subject of degree, current profession, level of proficiency in languages and use of computers.
About the translation they got from PDF Translator	• Material they translated: genre (type), where it was obtained, what would be done with the information, how many people would use the information • Perceived quality: what was the user's overall impression of the translation quality, what expectations did they have for the translation, and how well those expectations were met
About the use of PDF Translator	• Perceived ease of use of the tool: how long it took them to install it and get their translation • Other needs and tools used: how often they have the need to translate documents, what other tools they use for that, what languages were involved • Ideas for the tool: other things they hoped the tool would be able to do
Wrap-up	• Any further information they wanted like to give about PDF Translator. • Questions about the interview experience: how well they think MT worked, did they feel they were understood, and would they recommend this method of communication to their friends • Reminder that the information gathered was for research purposes only and that they would remain anonymous (either at beginning or end of interview)

The interviews were scheduled to be 30 minutes but lasted longer. The shortest was 42 minutes and the longest was 73 minutes. This was necessary to cover all of the questions I intended to ask, but also for the extra clarification requests and negotiation of meaning that is needed in MT communication. The timing did not afford much opportunity for establishing rapport or branching off into other areas that arose in our conversations.

2.4 Data compilation

As discussed in the introduction, one benefit of interviewing over IM is that the researcher does not need to transcribe audio files prior to starting their analysis. Skype keeps all interactions between two IM participants in one file, which is easy to download or copy/paste into another format for further processing. Even when the communication

includes asynchronous messages spread out over several days, such as during the interview-scheduling phase, the messages are saved in one file. In this project I transferred the data into Word, anonymized it by replacing interviewee names with pseudonyms, then formatted it to facilitate analysis. This was a simple operation and a time saver for me. Due to the study restriction in the number of interviews, the data was not transferred to a qualitative data analysis tool, but the transfer would likely have been a simple operation. An overview of the data gathered from the interviews is given in Table 3 below.

Table 3: Overview of interviews

Interview	Time (minutes)	Total word count	Number of turns	Number of unique questions asked
1	69	1529	84	31
2	50	2201	77	32
3	42	1611	70	30
4	73	1247	55	27

As with other interview types, some interviews involved more "talk" than others, although a somewhat comparable number of unique questions was covered. There was some variance in the length of the interviews, which seems to have no correlation with the number of speaking turns taken or the number of unique questions covered. This reflects the variance in how focused participants were on the interview: while some appeared to be concentrating exclusively on the interview, others seemed to be multitasking. I return to this in the Discussion.

3 DISCUSSION

My conclusion from this small pilot project was that MT-mediated interviewing is a data-gathering method worth further exploration. The pilot revealed some important considerations for using MT-mediated interviewing which could be helpful to other researchers who consider using the method. They could also be the start of an eventual understanding on best practices for using the method.

Seven considerations arose from the pilot project. Two of these, considerations of time zones and multitasking, are aspects that apply specifically to interviewing over IM, and they would be the same whether those interviews had been conducted between speakers of the same language or between speakers who were communicating through MT. In fact, my findings on time zones and multitasking reflect the results in studies on unilingual IM interviewing (Kazmer & Xie 2008; Voida et al. 2004). The other five considerations apply specifically to MT-mediated interviewing and include considerations of technology, time requirements, understanding and negotiation for meaning, participants' target language knowledge and adaptation, and user experience.

3.1 Considerations concerning IM interviewing

3.1.1 Time zones

My experience in this project mirrored that of Kazmer and Xie, who reported that "scheduling can be quite complicated especially when the medium is synchronous, in which case two primary factors come into play: time zones and local scheduling conflicts." (Kazmer & Xie 2008:262). I recruited participants from the group of all people who downloaded the Spanish version of PDF Translator during the time frame of the project. This meant that the majority of potential participants were located in North or South America, in time zones eight to nine hours earlier than my own. Although it was not intentional, all four of the eventual recruited participants were from Central and South America. This had two consequences.

The first consequence was that, at the time of the interviews, the interviewees were at work. It is possible that people considered it acceptable to grant an interview at work because in it, they would be discussing a tool that many of them were using at work. Another consideration is that typing in an IM tool does not resemble face-to-face interviewing and this meant that they could participate without being noticed. In fact, one participant remarked that if the interview were to involve video, he would not be able to participate until 8 p.m. because "at work is complicated," whereas if it were an IM interview, he could participate immediately. It is clear that for longer interviews, or interviews covering distinctly personal topics, a more appropriate time for interviewing might be in the evening.

The second factor arising from the time difference was that it was necessary for me as the interviewer to work outside of normal working hours. Through trial and error, I found that it was most effective to establish initial contact, recruit and interview people in the late evening hours of my time zone, requiring that I rearranged my schedule to be available and alert. It was a good reminder that although modern technology can help us overcome many restrictions in research, we still need to plan around certain practical limitations.

3.1.2 Multitasking

In using IM, the interviewer cannot determine whether the interviewee is giving their full attention to the interview, as they would in a traditional face-to-face or telephone interview. They might also be multitasking while also chatting with the interviewer, which would reflect the typical way IM is used. My impression when interviewing was that the interviewees were most likely doing other tasks in addition to chatting with me. However, when reviewing the transcripts, the overwhelming majority of responses came within two minutes of the submission of the previous chat turn. Two of the interviewees exhibited no response lag of greater than two minutes. One interviewee had only one lag of over two minutes. The fourth interview was noticeably different. Although it lasted the longest time, it produced the lowest numbers in total word count, turns, and unique questions asked. It was clear that the interviewee was doing other things while responding. However, that interview was also completed and no significant differences in results were detected. It would seem that, even if participants were performing other tasks in addition to answering

interview questions, those other activities were not so long-lasting or absorbing that they would affect the overall completion of the interviews.

3.2 Considerations Specific to MT-mediated Interviewing

3.2.1 Technology

Many tools are available for MT-mediated text communications. Some are in commercial use in closed environments, such as those used by technical support agents who support customers who speak a different language. Others are freely available on the internet. Aiken et al. (2009) listed eight chat applications integrated with MT (both commercial and free). Such a list changes rapidly and we can assume that there are more applications available today.

Skype Translator's preview version was a suitable platform for this type of interviewing, especially since it only required one of the participants to have the Translator version. As the regular version of Skype was free and readily available globally, it meant there were no overwhelming technical demands for potential interviewees. Furthermore, many people already had Skype installed on their computers, so it required no extra downloading or configuration work on their part. This made the task of recruiting willing participants easier.

Only once during this project did internet connectivity issues interfere in an interview, in the form of a minor and short-lived slowing of the internet. This was detected by both the interviewee and myself, but was brief and was probably caused simply by the wireless infrastructure in my location.

3.2.2 Time requirements

It was clear in the interviews that the 30 minutes I originally allocated for interviews was insufficient. This was a confirmation of Markham's statement on IM interviewing that "Synchronous interviewing online took about twice as long as face to face" (Markham 2004:365). In addition, during MT-mediated interviewing time is also needed to ask for clarification, to adapt texts to produce better translations, and to negotiate meaning. This would indicate that the time required for MT-mediated interviewing is even longer than what Markham suggests. This should be a consideration in planning, and also needs to be communicated to potential participants so that they can suggest an appropriate time for the interview.

This longer time commitment could reduce the number of people willing to be interviewed. The results of this pilot indicate that 45-75 minutes is a time frame people are willing to sacrifice in the middle of their day, at least when there is a small reward offered. However, as the interviews did not continue longer than that, I did not obtain data on the retention rates for longer interviews.

The time commitment required for a longer interview has another negative side in that it makes it more difficult to conduct impromptu interviews. In communities that rely on IM for communication, it is a common practice to "ping" other people, meaning sending them a quick message and seeing if they respond. If they do, an impromptu discussion can ensue. In essence, this is the same tactic I used in recruiting people for this project and it

worked well. As mentioned previously, instead of scheduling an interview for a future time, all participants were willing to start immediately or within half an hour. However, pinging someone to start a discussion and then launching a 90-minute interview might not produce good results. One solution for topics that simply require more time might be recruiting people with the "ping" strategy, then scheduling a short series of 30-minute interviews.

3.2.3 Understanding and negotiation for meaning

When evaluating the possibilities of adopting MT-mediated interviewing for data gathering, one of the main questions concerns whether the communication and understanding in the interview are sufficient to produce reliable data. On the one hand, the idea of gathering data through imperfect communication may seem ill advised. At times during the interviewing, it felt somewhat like working through an interpreter who was somewhat knowledgeable of the terminology of the subject we were discussing, but did not have a good grasp of grammar, and sometimes could not translate a word at all because the speaker did not say it exactly right. The question then arises whether a researcher can claim reliability when there is so much potential for misunderstanding.

On the other hand, interviews inevitably involve factors that potentially hinder understanding. Hirsjärvi and Hurme (2011) discuss the possible effects of participants' different communication styles and levels of linguistic competence – whether those are results of a difference in the participants' social class or simply personal differences. Ruusuvuori and Tiittula (2005) examine interviewing in the light of different situations: when the cultures of the interviewer and interviewee are different, interviewing older people, children, or people with aphasia, and finally, computer-mediated interviewing. Other, smaller factors can affect the interview situation. These include different accents, native and non-native interaction, technical difficulties, even background noises. Even the simple fact of there being two individuals with individual backgrounds, ideas, and understanding of the point of the interview can affect interview outcomes. Yet researchers conduct interviews regardless of all of these factors. To quote a professor of mine when I first asked her about the possibility of using MT-mediated interviewing and the ensuing imperfect language: "Of course we can deal with imperfect language. People do it all the time!"

One available aid we have for increasing and ensuring understanding in spite of imperfect language is simple communication: asking for clarification, repeating, or rephrasing things. My pilot project showed ample evidence of this throughout the interviews, as shown in the excerpts below. Note that the excerpts are taken from my screen and therefore have English on the top and Spanish under it. When I write, the Spanish translation is shown below, whereas when the interviewee, Tomás, writes in Spanish, the translation in English is shown above it. This method allows the reader to follow the conversation easily, focusing mostly on the top text in their own language.

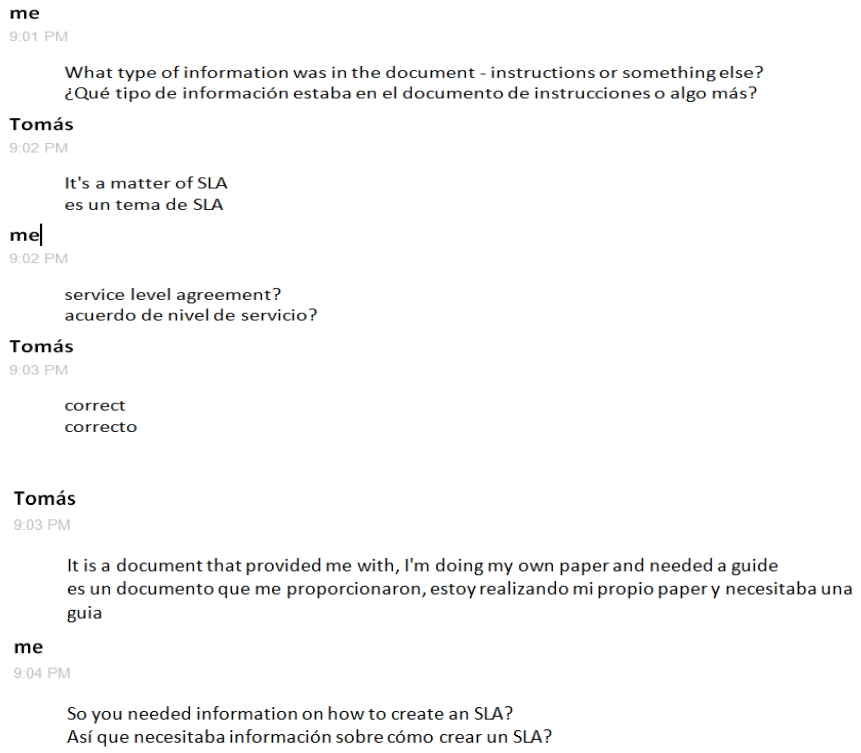

Figure 2: Examples of rephrasing

The first instance of lack of understanding involved an acronym. Fortunately, I happen to know it but I asked for confirmation to make sure. In the second instance, the machine translation was somewhat understandable, but I still needed to make sure I understood so used rephrasing to ask for confirmation.

Many of the gaps in understanding during the interviews were resolved in a similar way. However, not all were clarified and some issues and questions did remain after the interviews had ended. In future studies, it would be advisable to devise methods for overcoming this and ensuring that all necessary information is gathered and understood. One method might be to compile an initial list of questions and have it professionally translated and sent to participants prior to the interview. This would help define the domain and terminology of the conversation. Another idea might be to have a professional translator review the transcripts after the interview, either in full or only for those parts that the interviewer marks for review. This would be more time-efficient and less expensive than employing a translator to conduct or participate in interviews. After the review, interviewees could be contacted for a short follow-up discussion to resolve open issues and questions.

3.2.4 Participants' target language knowledge and adaptation

As mentioned in section 2.2 of this paper, I decided to recruit participants from Spanish-speaking countries because I had a basic understanding of Spanish and thought that that

might be helpful. As it transpired, three of the four interviewees also had some knowledge of English, so in fact we shared the aspect of being able to read the source texts and evaluate their quality to some degree.

The participants' knowledge of the other language surfaced in one very clear way: they tended to adapt source texts to try to produce translations that were more comprehensible to the other party in the interview. This adaptation of the source message reflects the research of Ogura et al. (2004) on the different adaptation strategies used in MT-mediated multilingual conversations. Evidence of this adaptation occurred on the part of both the interviewees and myself. For example, one participant mentioned *pages* several times during the interview. At first he used the Spanish word *hojas,* which was translated into *leaves* in English. In my reply, I used the word *pages,* which was translated as *páginas*.

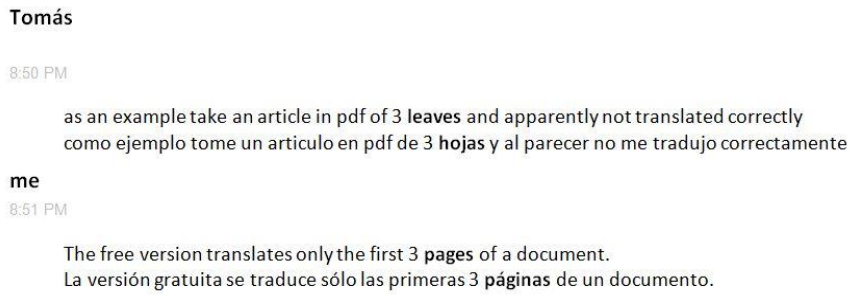

Figure 3. Example of adaptation

Ten minutes later, when we were again discussing pages, the interviewee again used *hojas* but then corrected himself:

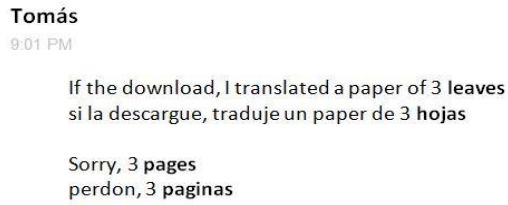

Figure 4. Example of adaptation

When the word arose once more 20 minutes later, he again used *página.* He seems to have learned from the MT output that the Spanish word *página* produces a better result in English than the word *hoja* does.

On my own part, I was asked for clarification in interview 3 and successfully changed the verb to produce a better output in Spanish:

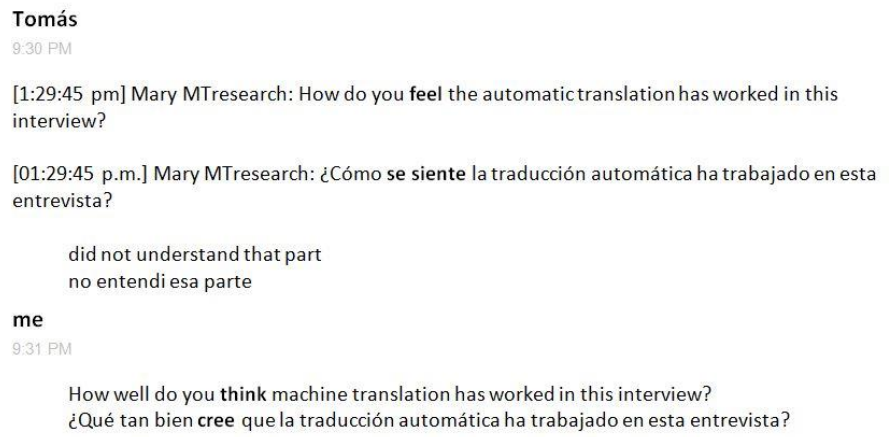

Figure 5. Example of adaptation

These examples indicate that in MT-mediated communication, participants' knowledge of the target language can affect communicative success. Even when participants rate their knowledge of the target language as basic or low, they do seem to be able to use that knowledge to evaluate MT outputs and adapt their messages in hopes of producing better translations.

Another indication that some knowledge of the other language was helpful came in the form of one participant's response to my question, "This interview has been done using automated translation. If your friend asks you about it later, how will you describe your experience?" The participant stated:

> *Very good, because it allows me to review the complete translation in the original language and in my language*
>
> *Muy buena, ya que me permite revisar la traduccion completa en el idioma original y en mi idioma*

Of course, this can only be helpful when participants have access to both source texts and translated texts, not just the translated texts. This is something that the manufacturers of MT and IM applications might want to take into account in their design work.

Another case where user access to both source and translated texts has potential to affect the quality of MT output is when English is used as a pivot language in the MT process. Currently some language pairs are challenging because it is difficult to find enough data to produce good machine translation, so texts might first be translated into English, and the English MT output is then used to translate into the target language. That process is not usually transparent to the end user. They can only guess that that is what is happening based on the MT results they get. However, what if it were made transparent, and MT users were shown the initial translation into English as well as the translation from that into the final target text? In cases where the user knows some English, they would have two texts to rely on for understanding instead of just one. Although this might be

more time-consuming, it could help promote understanding and potentially make the use of MT more successful.

3.2.5 User experience

At the end of each interview, participants were asked about their interview experience and their impressions of MT-mediated communication. All four participants gave a positive or very positive response. I first asked them how they felt the machine translation worked, and responses included expressions such as "well, very good," "understandable," "it all worked," "very good, excellent." When asked if participants felt I had understood everything they had to say or how well they thought we understood each other in the interview, their responses included "yes," "totally," "At 100%, thank you for your attention," and "very clear." I asked two of the interviewees if they would recommend this type of communication to a friend and they responded with "Yes" and "with security" (for sure). As mentioned earlier, the people who volunteered for these interviews represent a portion of the population that is already familiar with digital information and MT, and could be assumed to be more open to working with new technologies. This project shows some indication that, at least with this type of person, the initial experience with MT for communication tends to be positive.

4 CONCLUSIONS

This was a very limited experiment in MT-mediated interviewing. It confirmed some of the observations on interviewing over IM that have been reported in previous studies, and revealed some of the issues to be considered in MT-mediated interviewing.

One of the most interesting findings of the project was the effect of having access to both source and target texts in MT-mediated communication. When participants could see all texts in both languages, even their reportedly low level of knowledge of the target language seemed to be helpful in ensuring successful communications. Another interesting outcome was the participants' positive response to the medium.

The results of the project gave some preliminary indications that MT-mediated interviewing is worth further exploration as a data-gathering method for qualitative research. The most significant benefit of the method is the potential expansion it brings to the size of populations that can be included in research. Studies can be conducted on people who are widely distributed geographically, linguistically and culturally, without an equally large expansion in project resourcing.

The method brings certain challenges with it. Perhaps the largest of these is the potential for misunderstanding, which could lead to questions on reliability and validity. More research on MT-mediated interviewing, and MT-mediated communication in general, could lead to a better understanding of the best practices for using the method. It is hoped that the findings reported on in this article will help to trigger interest in further studies in this area.

Studies comparing this interviewing medium with others, similar to the comparative studies between IM and other types of interviewing by Opdenakker (2006) and Kazmer & Xie (2008), would help to reveal the weaknesses and strengths of the medium, or the

contexts where it is best applied. Another interesting comparison would be between interviews mediated by a human interpreter and those mediated by MT.

In the area of MT-mediated communication, it would be interesting to study the experience of advanced users of the medium. Currently those may be difficult to find, but there is one group that may already qualify: technical support agents in companies that are using MT-mediated communication to offer support in languages their agents do not speak. The experiences of those users could offer valuable input for further research and technology development. In general, it would be good to see more focus on developing methods for evaluating the many issues that can affect the effectiveness of MT-mediated communication.

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